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Solutions to the urban crisis, the Vietnam war, and other national problems require, and could be met by, the knowledge and manpower developed in American colleges and universities. But a severe financial crisis increasingly threatens even their normal operations. Enrollments have risen by about 3.5 million since 1930, with a large segment of this growth occurring in the past 10 years. Between 1955 and 1965, student bodies grew by 2.9 million and total expenditures and income increased from $3.4 to over $14.9 billion. Current federal assistance includes student aid, research grants and contracts, and construction funds. Most of this support takes the form of categorical aid, or programs linked to a specific federal agency. Future manpower requirements will help to raise enrollments to approximately 8 million in 1975. Broad institutional grants could narrow the gap between income and expenditures. More funds for research libraries, computers, international studies, and the arts and humanities are needed as well as new aid programs for areas of public concern such as inner cities, pollution, and improvement of elementary and secondary education. As federal support programs increase, better coordination among them and more communication between their policy makers and educational leaders are necessary. (WM)

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The Association of American Universities

The Federal Financing of Higher Education

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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Summary Statement and Principal Recommendations

The strengths and needs of American higher education comprise critical elements in the strengths and needs of the whole nation.

In the past two decades the growth and strengthening of American higher education have been impressive national achievements. In the coming decades, tasks of equal magnitude must be accomplished. Enrollments must be expanded. The quality of education must be improved. Research and development efforts must be advanced. New fields of study must be explored. Additional community and national services must be undertaken if the country is to gain in strength and move closer to its increasingly ambitious national goals.

Potentially, the nation's system of higher education possesses the capability to carry out these responsibilities with at least the vigor and purposefulness it has exhibited over the past two decades. It faces, however, a severe and worsening fiscal crisis, and whether it can in fact do what is needed will depend on increased financial assistance from all available sources, but especially and particularly from the Federal Government.

The urban crisis, the Vietnam war, and other problems facing the United States produce conditions of serious national fiscal stringency. The expectations imposed on higher education and its requirements must therefore be assessed in the light of all the country's needs and aspirations. The nation must, for instance, allocate major resources to national security, the alleviation of the urban crisis and poverty, the improvement of elementary and secondary education, health, and other critical concerns. Higher education's basic role in the solution of these and other problems gives its needs a special order of importance.

The growth of the national economy depends increasingly upon the scientific insights, the technological advances, and the educated people produced in institutions of higher education. The efficient and equitable management of the nation's public and private affairs requires, more and more, the background and the trained intelli-

gence of a college or university education. The overcoming of prejudice and the achieving of equal opportunity among all the people are closely related to education. None of our deepest national problems can be solved without the human resources and knowledge made available by higher education. The importance to a nation of our kind of a broad, diversified, vigorous, and growing system of higher education is fundamental.

Principal Recommendations

The Federal assistance required for higher education must include the following features:

1. Expanded student aid programs to encourage and enable the needy and disadvantaged to obtain higher education, and expanded loan programs to give students wide choice of where and what they will study.

2. Recognition that there is a special Federal interest in sustaining, extending, and strengthening graduate and professional education. Such recognition must include additional graduate fellowships and traineeships and increased cost-of-education supplements to Federal fellowships more closely approximating the real educational cost to the institution.

3. Provision by the Federal Government of a larger share of the capital funds required for construction—including an overall increase in appropriations combined, in the Higher Education Facilities Act, with an increase in the permissible maximum in the Federal share from one third to two thirds or more. The criteria governing facilities grants should include improvement of educational per-

formance, although greater enrollment capacity must be a major, overall objective.

4. Strong support of research in the universities and provision for its continuing development. Federal funds should pay the full costs of federally sponsored research. Appropriations should be increased for institutional grants (as of the type now made by the National Science Foundation) that can be used with freedom and flexibility by the universities.

5. Recognition of research libraries, modern high-speed computation, and international studies as areas which relate closely to the foregoing responsibilities of universities, but each of which has certain distinct aspects and each of which forces large expenditures upon the modern university. To this should be coupled recognition of the arts and humanities as areas in which modest support can substantially improve the performance of colleges and universities as civilizing influences in the American society.

6. Recognition that new funding must be provided if colleges and universities are to meet effectively the rising calls for action programs and for research and instruction aimed at such large current problems as "the inner city," air and water pollution, and the improvement of the schools.

7. The initiation of a system or systems of broadly based institutional support for colleges and universities as a necessary supplement to their current sources of support and to the various kinds of categorical support which are also required. In developing and adopting general aid formulae, great care should be given to insure recognition of the levels and types of instruction and their widely varying costs.

THE REPORT

I. SOME BASIC CONSIDERATIONS

American higher education is experiencing critical and widespread financial pressures. Virtually every type of college and university faces a widening gap between available income and the level of expenditures required to undertake needed expansions or improvements—or even, in many cases, to sustain normal operations.

The Association of American Universities is convinced that these pressures constitute a threat to the nature and vitality of American higher education and are therefore a cause for national concern. We offer this report to call attention to the demands placed upon institutions of higher education, to analyze the complexity and severity of the growing fiscal crisis, and to recommend the largely Federal action needed to close the financial gap.

The report and its recommendations are founded on a number of basic considerations:

1. "Higher education" in America is provided by more than 2,000 institutions varying in control, level, purpose, size, character, and quality. This variety of institutional types is an invaluable aspect of a diffuse and yet highly responsive *system* of higher education, a system whose value to the nation has been amply demonstrated and whose independence, flexibility, and adaptability are widely admired abroad. It is important, then, that any new financial arrangements designed to meet higher education's needs be so designed as to uphold, not undermine, the freedom and the diversity of that system. Colleges and universities must be free to function with independent and sometimes critical initiative, and there must be sufficient differences among them to accommodate a number of educational theories and approaches, a variety of views and actions on current and future problems, and a range of choice for students with differing desires and capabilities.

2. Two factors commonly used to distinguish institutions of higher education deserve particular comment in a report of this nature:

Governance: In our view, both state and private institutions have indispensable roles to play; both function in the national interest; and both demonstrate common, growing fiscal problems as they seek to meet the public responsibilities they share. Federal programs of financial support have not to date distinguished significantly between the two, and should not do so. Discriminatory aid to one type of institution could only mean deteriora-

tion for the other, with consequent intolerable strains on higher education as a whole.

Level: Two-year colleges and institutes, four-year colleges and institutes, and institutions with graduate and professional programs perform different functions and have different goals. Though it is inappropriate to say one level is more important than another, it is important to recognize that the different missions of the various levels sometimes pose different problems. The 42 U.S. members of the Association of American Universities, for instance, are heavily committed to graduate education and research. Together, they award 52% of the graduate and professional degrees and 75% of the Ph.D. degrees granted in the United States each year, and carry on 63% of the federally sponsored research performed in universities.* Hence, these universities have certain particular responsibilities and concerns. At the same time, they also perform many of the functions which are the primary job of other levels of higher education, and their activities impinge either directly or indirectly upon virtually every other aspect of formal education in this country. Therefore, this report directs considerable attention to the special requirements of these national universities, but it is not confined thereto, and most of its considerations and recommendations are directed to the financial difficulties of higher education generally.

3. Achieving equality of access to higher education based solely on ability and encouraging the highest possible educational attainment are both essential objectives in a national policy of aid to education. A concern for equality of educational opportunity has, properly, justified various existing programs of Federal support, and they become increasingly necessary as fiscal pressures on institutions force up tuition costs. In many quarters, the pressures of rising enrollments have outrun our ability to provide a reasonable quality of education for all students. Thus, as even greater numbers become able to attend, Federal funding for educational costs becomes a necessary complement to financial aid for students. Simultaneously, wherever possible, the pursuit of excellence must be sustained and encouraged. Federal assistance to higher education must seek to recognize both where high quality exists and where it is genuinely in the making.

4. As already indicated, in urging a substantially increased in-

* If the so-called Federal Contract Research Centers are included, this percentage increases to 77%.

vestment in higher education by the Federal Government, we are not unmindful of the other important claims on the Federal tax dollar; nor do we expect that major new Federal programs in support of education can be undertaken while the country's Vietnam commitments are as large as they are. Nevertheless, it is clear that the success of the nation's effort on almost any front depends to a considerable extent on both the knowledge and the manpower developed in our colleges and universities. The fiscal difficulties now encountered by these institutions as they attempt to meet these obligations dictate that we not wait until after the resolution of matters in Southeast Asia. It is imperative that changes and improvements be initiated now and that plans be laid for the more substantial programs necessary to insure continued growth, strength, and creative opportunity for America's colleges and universities.

5. Finally, although we shall concentrate in this report upon assistance from the Federal Government, the need must be emphasized for continued and increased support from other sources. *Greater Federal aid should not be a substitute for, but rather a supplement to, the other sources of income for higher education.* This is important both because of the sums required and because such diversity of support underwrites greater adaptability and encourages local initiative and experimentation, as opposed to institutional conformity to preconceived and centrally determined norms.

II. THE NATIONAL SIGNIFICANCE OF HIGHER EDUCATION

The past several decades have seen rapid and major growth in American higher education. Since 1930 total enrollments have grown by approximately 3½ million students. Total annual expenditures have increased from $508 million to $14.9 billion. Research expenditures have increased from $18.1 million to $2.2 billion,* with about 70% of the latter amount being furnished by the Federal Government.

A large proportion of this growth has occurred in the past ten years. Between 1955-56 and 1965-66, opening fall degree-enrollment grew by 2.9 million students, from 2.6 million to 5.5 million. In the

* Again excluding the so-called Federal Contract Research Centers attached to universities or groupings of universities.

same period, total income and expenditures tripled from approximately $3.4 billion to over $14.9 billion. Instructional and professional staff doubled, increasing from 236,000 to 465,000 people. Total earned degrees increased by 80% and doctorates in science and engineering by 118% during the decade.

This increased national commitment to higher education has yielded handsome returns both to individuals and to the society at large. Educational opportunities beyond the high school have made personal achievement and effective social contributions possible for an increasingly larger proportion of the American population. In addition to providing essential human resources for the nation, higher education has made possible rapid dissemination and use of existing technology, and has been a crucial factor in the creation of new technologies. Today, as never before, the security of the nation, the health of its people, and growth of its economy depend on the knowledge, insights, skills, and talents that higher education cultivates and makes available.

Looking forward, almost the only certainty about higher education in the United States is that the demands placed upon it will continue to grow. An expanding population and an expanding proportion of the population will seek more opportunities for higher education. An increasingly technological and complex society will require more exacting standards of training at all levels. Even more than at present, business and government will turn to higher education for new knowledge and techniques as well as for the men educated in their use and development. New opportunities, some of them not yet even glimpsed, will open to academic researchers to explore the nature and origin of living systems and of human disease, to understand and exploit the properties of matter, to learn to predict and control changes in the natural environment, and to understand the nature of the cosmos and the physical processes which determine its evolution. The colleges and universities will be asked, increasingly, to attack society's most difficult problems with research and action programs. They will be expected to help make urban life productive and satisfying, while assisting disadvantaged minorities to participate more fully in the benefits and responsibilities of the society at large.

To be sure, the awesome and insistent problems confronting our nation at home and abroad will not be solved by education alone, but our best hopes of coping with these challenges must rest heavily on improved knowledge and greater numbers of well educated men and women. Thus, in concrete terms, just to maintain the present

ratio of physicians to population will require training 100,000 doctors between 1965 and 1975. Eighty thousand engineers and 30,000 scientists will have to receive bachelors degrees each year during the next decade to preserve existing ratios with the other educated professions. In the same period the nation will need about 2 million new elementary and secondary school teachers and approximately 250,000 additional faculty for colleges and universities. The number of Ph.D.'s and highly trained personnel required in other fields will be no less substantial.

For all of these reasons, enrollments in higher education are expected to climb from 5.6 million in 1965 to approximately 8 million in 1975 and to between 13 million and 16 million at the end of the century. Similarly, unless recent trends alter radically, graduate enrollments will grow from 314,000 in 1960 to 1 million in 1975 and 2 million or 2.5 million by the year 2000. To accommodate this demand, total current expenditures on higher education must increase from $11.9 billion in 1965 to between $15 billion and $21 billion in 1975. Further, construction needs for this decade, 1965 to 1975, are estimated at $15-$22 billion—*i.e.*, an annual average of at least $1.5 billion and perhaps of $2.2 billion. Moreover, the history of past projections suggests that all of these figures may represent under-estimates of the true increases.

III. THE FINANCIAL CRISIS IN HIGHER EDUCATION

If continued growth in the demands placed upon higher education are certain, the ability of colleges and universities to respond well to these demands and challenges is not. The most critical question facing higher education today is how to find sufficient resources.

Many institutions are already finding it difficult to sustain current activities, let alone undertake new areas of instruction. Scholarship and loan funds available fall short of students' needs. Research efforts, even those normally assisted by the Federal Government, are proving difficult to sustain on the scale and in the variety that have been so fruitful. More insistent calls for public services at home and abroad are putting added strains on tight institutional budgets. New construction of perhaps $2 billion annually for the

next ten years must somehow be financed, while funds to maintain existing facilities and to renovate those not overly obsolescent must also be found. Such factors in the last 15 years have forced institutions to increase their expenditures at an annual rate of 12%, and the future holds no promise of a reduced rate of growth.

The elements accounting for such increases in expenditures are complex. Some are apparent; one is subtle but of primal importance.

Most obvious, of course, is the fact that enrollments in institutions of higher education have grown enormously—at an annual rate of 5% since 1952. Only slightly less apparent, however, is the fact that educational expansion occurs in more ways than increases in enrollment. New technologies, such as computer science and systems analysis; new areas of study, such as African studies and other foreign area programs; new sciences, such as molecular biology and oceanography; new techniques, such as the introduction of quantitative methods into the social sciences; growth in the relative proportion of graduate students; expanded efforts in basic research; and the prospective emergence of new interdisciplinary social service professions, such as urban planning or the education of the underprivileged—all of these imply higher costs even without enlarged student enrollments. In other words, an adaptive, responsive educational system is also a costly educational system.

Moreover, the costs of operating an institution's physical plant, of maintaining libraries and of constructing new facilities will rise at least in line with the general rise of the costs of goods and services experienced by other elements of the society. Colleges and universities are no more exempt than the rest of America from the effects of general inflationary tendencies in the economy.

The more subtle, and ultimately more threatening, reason for the financial crisis in higher education is deeply embedded in the economic order of the nation as a whole. During this century, the American economy has experienced a steady annual increase in productivity of approximately 2.2% per year. Specific sectors, particularly those in manufacturing, have had much higher increases. Education, however, has had very few rises in productivity. That is to say, one student costs much the same to educate, in terms of teachers' time and materials, as he did a century ago. Despite the high hopes and earnest efforts put into new educational technologies, the film, the tape, the television, the computer, and programmed instruction thus far have shown a much greater capacity to enrich and improve learning than to reduce its costs. Very likely in higher education generally, and certainly in research-oriented

graduate education, there will never be a substitute for close individual instruction.

As increased productivity per man-hour allows other sectors of the economy to increase the salaries and benefits of their personnel, higher education must do likewise if it is to remain competitive in attracting and retaining highly trained and competent faculty and administrators. This, in fact, has happened, as evidenced by fairly constant increases of almost 5% a year since 1948 in average professorial salaries. But, if faculty compensation increases at a relatively steady rate, while the amount of faculty time required *per student* remains much the same, *costs per student* must increase at about the same rate as salaries. Thus, even if the educational sector were never to expand, constant increases in total costs must be expected, and experience over an extended period of time confirms that costs per student in higher education do rise whether expansion occurs or not.

Colleges and universities must endeavor to effect savings where they can without damage to the levels and kinds of education for which they hold particular responsibilities. Most institutions of higher education are deeply, even painfully, engaged in this endeavor. Economies of operation will be achieved, some of them important. For the reasons indicated, however, alleviation of the basic fiscal problems of higher education cannot be expected from these economies, and it is of fundamental importance that there be clear recognition of the phenomena just discussed. If higher education were completely static, unresponsive to new needs and responsibilities, its costs would still rise at about 5% a year. To the extent that the higher educational system is dynamic, expanding, and responsive to new demands for its services, costs will rise that much more.

On the other side of the ledger, it appears highly unlikely that traditional sources of income for both state and private institutions will be able to increase their contributions at rates equal to such built-in increases in costs. There is even reason to suspect that, in the short run, contributions from several of these customary sources will not increase as rapidly as they have in the recent past.

State governments have contributed significantly to higher education in the past and should be expected to increase their support in the future. However, state economies differ in their ability to support higher education, and state revenue systems, *per se*, are not as productive as the Federal revenue system. Further, state assistance is inevitably subject to the differing priorities and needs of

particular states, while heavy reliance on state support tends to close each state institution's doors to outsiders—American and foreign—thus decreasing the breadth of student choice and increasing institutional provincialism. If national benefits and national priorities are to be recognized, the national government must provide much of the critical margin of additional support required.

Institutions of higher education are presently exerting significant efforts to increase contributions from private sources—individuals, foundations, and corporations or businesses. Since the late 1950's many institutions have announced major fund-raising campaigns, and some of these have met with great success. Yet, there is evidence that such efforts may have entered an era of diminishing returns. Further, competition for the private philanthropic dollar is increasing on many fronts. Meanwhile, the increased interest of the foundations and other private givers in strongly action-oriented, social programs may represent the beginning of a trend in the climate of philanthropy unfavorable to liberal education in the colleges and to the advanced levels of education and of scholarship in the traditional disciplines with which universities must be concerned.

Corporation and business contributions have attracted increasing attention of late, but such funds currently represent less than 5% of the income of institutions of higher education. To be sure, this is critically important support for a great many institutions. Yet, corporate giving leaves unmet many general needs of colleges and universities, and there is no reason to expect a major break-through in corporate philanthropy whereby industry and business will pick up a substantially larger share of the support of higher education than they carry at the present.

The opportunities some institutions have to increase endowment income by bolder investment policies also have drawn considerable recent attention. That there is room for improvement in this regard cannot be doubted, but fundamental solutions to the financial problems of higher education are not to be found here. Endowment income is only 13.5% of the income of private institutions of higher education, and is a much smaller part of total educational income.

This leaves tuition and fees. The prospect of major increases here is not encouraging. The percentages of instructional costs met by state and local governments, by private gifts and grants, and by endowment earnings, all declined in the 1953-64 decade, forcing up fees and tuitions in both private and public institutions. Excluding student aid on which complete figures are not available, the share

of educational costs borne by the students rose more than 22% in public institutions, about 10% in private.

Unless accompanied by large scale student aid programs, further tuition increases will work against efforts to encourage and support the higher education of the sons and daughters of disadvantaged families; and, as it is, the level of charges in some state universities begins to seem at odds with the principle of low-cost, public education which has made this nation the best educated in the history of the world. Thus, several factors combine to limit tuition increases and diminish the net income they can be expected to return. First, tuition increments do not translate into equivalent amounts of net income, for expenditures on student aid must grow with increases in educational charges. Secondly, the desire of many private institutions to remain open to students of ability irrespective of the income level of their families places serious limits on the rate at which they can increase their fees. It would not be in the national interest for private institutions to be restricted to providing educational opportunity to a small, privileged class. At the same time, public institutions are properly proud of their long tradition of offering quality education at the lowest possible cost to the individual student.

Projecting these restraints on income growth against the inevitable increases in expenditures presents a stark fiscal future for higher education. Current analyses point to the sobering existence of a growing and substantial, even staggering, gap between income and expenditures in many private institutions, and an equally serious and growing quality deficit in public institutions.

In point of fact, of course, even in the face of such deficits, few institutions will do anything as dramatic as closing down. But unless the needed resources are found, higher education as a whole will experience a deterioration in effectiveness. Outlays will be cut back to meet income limitations. Such retrenchment inevitably would mean fewer faculty to teach more students, reduced library acquisitions and cultural programs, curtailed opportunities for the disadvantaged, slowed movement into new fields, less competent and productive research, loss of faculty, delayed maintenance, and adherence to the *status quo* instead of vigorous movement into new aspects of education or public service—in short, the slow stifling of higher education as a vital, creative, productive force in American life.

If a strong and diversified system of higher education is to be maintained in a growing America, it seems clear that the Federal

Government will have to increase and extend substantially its support of higher education. Not only need, but also propriety point to this conclusion, for a very substantial proportion of the benefits from higher education accrue to the nation and society at large, not to any one individual or set of individuals. Hence, as college-going becomes the normal pattern for more than half the college-age population, it is fitting that the nation at large, through the Federal Government, assume an increasingly significant proportion of the institutional costs of higher education, over and above aid to needy students as individuals. Moreover, the Federal tax structure is far and away the most equitable and productive system of revenues in the nation. It is largely based on a progressive and fair income tax, in contrast to the generally regressive structure of most state tax systems, and, perhaps even more important, its revenues increase automatically as the nation's Gross National Product grows.

IV. FEDERAL ASSISTANCE TO HIGHER EDUCATION

The Federal Government currently provides assistance to higher education through three kinds of programs—(1) aid to students; (2) grants and contracts for research, services, and certain specialized kinds of training; and (3) assistance for the construction of facilities. These programs have been significant factors in the recent growth and development of higher education. But it is clear that additional and more comprehensive Federal support must now be sought. In saying this, we strongly support a mixture of various types of Federal aid. Only thus can we meet effectively the many different kinds of financial needs in higher education today. Equally importantly, pluralism in the means and sources of Federal support constitutes an invaluable safeguard for institutional autonomy and continued healthy diversity in the overall system of higher education.

Broadly speaking, there are two principal kinds of financial problems in the instructional function of higher education. One is the need of students for sufficient funds to pay tuition, fees, room, board, and book costs. The other is the need of institutions for sufficient funds to meet the cost of providing instruction appropriate to the students they enroll. We have directed recommendations to each of these two general problems. These recommendations, in

combination, constitute a comprehensive program of Federal support for the instructional function of higher education consisting of broad-purpose institutional grants and enlarged scholarship and loan programs for students. To sustain the research and public service functions of higher education and to house the growing responsibilities of all institutions, we have recommended strengthened special-purpose assistance in those areas where categorical aid appears to offer the greatest advantages.

1. The Support of Students

Programs of student aid broaden opportunities for higher education and extend the range of choice open to students as to where and in what sorts of programs they study. Hence, aid to students not only directly favors them as consumers but also through the workings of a free educational market can have an influence on the quality of academic programs.

The Federal Government currently provides approximately $1.1 billion for undergraduate grants and loans. Approximately one half of this amount is in the form of loans, while the other half takes the form of grants, wages for part-time work, or veterans' benefits. The National Defense Education Act and the Higher Education Act of 1965 are the major mechanisms for providing Federal support. The U. S. Office of Education estimates that roughly 1.2 million students benefited from such aid in 1966.

During the academic year 1966-67, the Federal Government also provided approximately $441 million to graduate students, which included support of almost 17% of all full-time doctoral candidates. Of this total $277 million was in the form of fellowships and traineeships, while the remaining $164 million was provided as loans, work-study grants, and veterans' assistance. Such Federal aid to graduate students is given through a large number of Federal agencies, with the Office of Education providing only about one third of Federal aid to graduate students and all of HEW only slightly more than one half.

Taken together, the current programs contain the main features of the sort of comprehensive Federal policy toward student aid which we judge to be necessary. We regard this policy as properly having three principal aspects—namely, (1) at the undergraduate level, direct assistance (including scholarships and work-study subsidies) based on need and aimed primarily at students from

lower income families; (2) loan funds available for students in a better position to borrow and generally enabling students to exercise a wider choice among the institutions they can attend; and (3) fellowships and traineeships for graduate students, accompanied by cost-of-education supplements to institutions. In all of these areas there is clearly need for substantial additional investment by the Federal Government. The recent reductions in new graduate fellowships supported by the NDEA and NASA are especially disturbing for the negative effect they will have on the development of high-level talent in the universities. This trend must be reversed. But in the whole broad area of student support, what appears to us to be required is a refinement and extension of existing policies and programs rather than any new set of them.

In supporting this mix of Federal student aid programs, we have explicitly rejected the notion of income tax deductions or tax rebates for educational expenses. In recent years this notion has drawn support both from those seeking relief for individual taxpayers and those who see such developments as ways to make it easier for institutions to charge higher fees. In our judgment, these proposals are both wasteful of Federal revenues and unsuited to the needs and problems of higher education. First and foremost, they provide little assistance to low income families most in need of aid. Second, if they are to afford relief to the middle and upper income taxpayer, they will provide little aid to institutions; if, however, institutions take advantage of such schemes to charge higher tuition and fees, they will provide little relief to taxpayers or students, while they offer less general benefit, for the number of dollars involved, than do other forms of Federal support. Moreover, the provision of tax rebates or deductions for educational expenses would constitute a special treatment of education and be contrary to sound Federal tax policy, as we see it. Therefore, we do not favor such tax rebates or deductions in the mix of policies appropriate to the support of higher education.

Grants for Study in College

The economic value of undergraduate education to the recipient is generally such that a broad program of Federal scholarships for undergraduate study does not seem to us to be justifiable. However, there is evidence that significant numbers of capable students are still deterred from higher education because of insufficient means.

In particular, potentially able young people from severely disadvantaged backgrounds need special aid and encouragement if they are to carry their education forward beyond high school.

Therefore we strongly recommend an expansion of Federal Economic Opportunity Grant and Work-Study programs based upon need and designed to make educational opportunities beyond the high school available to all qualified students. Moreover, because all students impose costs on the institutions they attend, these aid programs to needy students should not require matching contributions from institutions. Instead, supplemental cost-of-education grants to the institutions should be considered, especially where they will help with the added guidance and counseling often desirable for students from impoverished backgrounds.

Student Loans

The heightened importance so many individuals now attach to higher education and the scarcity of funds for allocation to it have in recent years brought educational loans into increasing use. Extension of educational opportunity and choice through Federal loan programs (and most particularly through Title II of the NDEA) has proved both feasible and of benefit to many individuals. Enlarged Federal loan programs are certainly called for, but in our judgment, they should not be pressed as a means of enabling institutions to shift to students a larger proportion of their costs. This, of course, is not to urge that students and their families pay a smaller share, a lesser relative amount, for higher education. As both individual incomes and educational costs grow, increases in the actual educational charges faced by students are to be expected.

In any federally funded loan program for students, it is desirable to avoid inequitable repayment burdens and, in so far as possible, to prevent the act of borrowing from inappropriately influencing students' career decisions. Certain recent proposals for expanding or modifying Federal loan programs (such as the so-called "Opportunity Bank") seek to meet these problems. Those thus far suggested have not provided workable alternatives to major objections which have been raised. Perhaps some generally acceptable program of this sort can yet be developed. Until it is, current loan provisions can be extended to more individuals merely by increasing the Federal funds available for loans under current repayment systems.

The Support of Graduate Students

The same basic alternatives are open for the support of graduate students as undergraduates—namely, grants and loans. However, the circumstances of graduate study require very different emphases and combinations of the two. For one thing, with the exception of certain types of professional study (*e.g.*, the law and medicine), graduate education results in nowhere near the same increment to personal income as does attainment of the Bachelor's degree, and, like basic research, the highly specialized skills developed in graduate education are of more directly national, and indeed world-wide, consequence. Hence, their development properly should have a larger claim on *Federal,* as against personal, local, or regional resources. A second factor to consider is that wider undergraduate use of loans means that students entering graduate or professional schools will increasingly be already encumbered with debts.

In recognition of these facts, substantial Federal support for graduate students, especially in the sciences and engineering, has been available over a number of years. From the end of World War II to this year, there has been a steady increase in the number of awards made through the several major Federal programs which now provide fellowships and traineeships for graduate study—the NSF, NIH, and NDEA. Most such programs have come to include a "cost-of-education" supplement to the institution. This assistance, provided simultaneously to graduate students and graduate schools, has been instrumental in advancing the high caliber of graduate training in this country and extending such training to an increasing number of universities. Moreover, along with support accorded to basic research and to certain types of applied research related to professional schools—which contribute in essential ways to the proper intellectual growth of graduate and professional students—these fellowship programs have done much to create the scientific eminence and technological strength which our country currently enjoys.

If the nation is to continue to have these benefits over any long span of time, and if our universities are to meet demands for trained manpower beyond those of the sciences and technology, it is imperative that the existing Federal fellowship programs greatly expand. Moreover, the institutional grants accompanying fellowships and traineeships must be substantially increased and the built-in need for automatic future increases should be recognized. (If $4,500 is taken as an average annual cost to the institution of edu-

cating a graduate student, and if an annual cost rise of 6% is assumed to continue, the cost to the institution will equal approximately $8,000 in 1975-76.*) The current institutional supplements, in most cases set several years ago at $2,500 each, cover less and less each year of the real costs which a graduate student imposes on the institution in which he studies.

2. Facilities

The expansion of higher education, qualitative improvements in it, and much of the evolution of new programs of research and service, all hinge significantly on the sorts of assistance to academic construction which the Federal Government has provided through loans and grants.

According to the U.S. Office of Education, a deficiency of nearly 140,000,000 square feet of academic space currently exists in higher education—excluding both student housing and the problem of obsolescence in many existing structures. Over the next five years, at least 1,230,000 new places will be required for expected additional full-time enrollments. These needed new places and these deficiencies, it must be recognized, entail not only classrooms but also laboratories, libraries, and even wholly new institutions. Thus, as indicated earlier, to accommodate both the increases in enrollments and the rising demands for research and service activities confronting our colleges and universities will require more than $1.5 billion annually and probably closer to $2.2 billion annually over the next ten years.

In view of the current backlog and these large needs that loom so close ahead, we strongly urge increased appropriations under the Higher Education Facilities Act and a doubling of the allowable Federal grant share from one third to two thirds of project cost for four-year institutions. A similar allowance should apply to support of research facilities under NSF and NIH programs. Moreover, the criteria governing facilities grants should include the improvement of educational performance and the sustaining of activities of the highest quality. They should not necessarily entail expanded enrollment in each instance, although greater enrollment capacity must be a major, overall objective.

* These figures do not take into consideration the amount of research support required. Based on figures published by the NSF, this may exceed $100,000 per Ph.D. degree awarded in the sciences and engineering.

3. Support of Research in the Universities

Most Federal funds going into higher education to date have been in the form of grants and contracts to support research of interest to one or another agency of Government. The interests of national security and national health have spurred this support in the years since World War II, but the Government's sponsorship of research in engineering and the natural and social sciences has extended well beyond those principal objectives.

These funds have been awarded as government purchases of designated university services, rather than as assistance to higher education as such; yet, they have aided and strengthened universities in many ways. They provide stipends for graduate students employed as research assistants. They have been used to help universities hire and retain faculty. And through the provision of sophisticated instrumentation and logistic support they have enabled universities to conduct research of greater significance with greater efficiency, and thus to pursue more effectively their basic mission of advancing human knowledge and understanding.

Of some $16 billion expended by the Federal Government on research and development in FY 1968, only $1.43 billion is for work in the universities. Yet, the latter sum represents roughly a fivefold increase in federally sponsored research expenditures in the universities since FY 1958, when such support amounted to $0.29 billion. This growth appears to indicate widespread recognition in the Government and the nation at large that we need strength in basic research and must move vigorously forward with it on a broad front.

In fact, however, the increases in Federal expenditures in FY 1967 and those estimated for FY 1968 for research and development in universities are markedly less than those of recent years. Compared to annual increases of between 11% and 29% in the preceding decade, they stand at 7% and 2% respectively. Given the rising costs of goods and services throughout the economy, the prospective 2% increase for 1968 represents an actual reduction in research supported. Furthermore, the total change in support for the year is comprised of a modest and welcome increase for the life sciences and social sciences, and a substantial decrease for those agencies (especially the Department of Defense) on which the physical sciences are mainly dependent for research support. It might be maintained, of course, that the very sizable increases for university-based research in the post-Sputnik era could not be continued. Still we cannot see

reductions such as those for FY's 1967 and 1968 as working anything but harm to the research competence of this country, especially if extended beyond a short-term emergency period. The effort of the Federal Executive to forestall such results by recommending an increase of 13% for university-based research in the FY 1969 budget comes none too soon and merits strong support.

It is also important to consider the manner in which this Federal investment is allocated. There are good reason for seeking a wider distribution of Federal academic research support among geographic regions and among institutions. We strongly favor the developing of new "centers of excellence," but the national interest will not be served if this is done at the cost of weakening established and more experienced centers. Excellence in graduate education and research depends to a considerable extent upon a "critical mass" of research funds and talented and able graduate students, faculty, and technicians. Thus any effort to spread this capability must be matched by heavily increased Federal research funds, or it will result in a reduction of total scientific performance. Thus it is clear that both developing and established institutions require attention and nurture, and both require it on a scale that can only increase.

Hence, we urge a reëmphasis on high-quality research potential, along with expansion of research capabilities, in the awarding of Federal research grants and contracts. This should apply not only in those agencies supporting scientific and engineering research but also those authorized to support work in the social sciences, the arts, and the humanities.

Institutions only lightly engaged in sponsored research can sometimes afford to share in its costs readily because the cost involved is such a small fraction of their total budget. However, for those undertaking a substantial volume of sponsored research, even small percentages of cost-sharing soon place marked strains on budgets and thus by preëmpting an institution's own resources, limit its flexibility and adaptability in responding to other educational needs. Therefore we urge that Federal assistance to university research of interest to the government meet the full costs.

We would also favor an enlargement of NSF-type institutional grants, which permit greater freedom and flexibility to universities in the management of research funds, and the extension of such grants to the arts, humanities, and social sciences. Nevertheless, in our judgment the project grant or contract, which allows qualitative controls, is the best general mechanism for Federal support of aca-

demic research and should be retained as a major device for directing Federal research funds into universities.

At the same time, with respect to this research, we would hope that a new mode of Federal funding may be evolved to enable charges for faculty salaries to be separated from project contracts and grants. Such exclusion will require provision of equivalent funds by other means. Here, without arguing for a specific plan, we would simply observe that to free institutions from having to charge to short-term projects long-term commitments to their faculties would make for healthier relations within universities and firmer management of institutional resources. Furthermore, the type of detailed time accountability of faculty which is a concomitant of the cost accounting philosophy of special purpose programs is incompatible with the traditional relationship of a faculty member and his institution. In the support of faculty, the principle of fund accountability, common, for example, in handling of endowment income and foundation grants, should be recognized instead of the principle of cost accountability used in the administration of project grants and contracts.

4. Other Forms of Categorical Support

Counting the support of graduate study and research, most Federal funds going into higher education are in the form of categorical assistance; that is, they are for specified purposes associated with the specific mission of one or another Federal agency. In its various forms, categorical assistance has been a powerful means of encouraging educational activity in areas of national importance.

There are a number of areas where strengthened programs of directed, selective support seem to us to be of critical national importance in these times. Four of them relate closely, but not exclusively, to the responsibilities of universities as centers of advanced education and scholarship. Specifically, we refer here to the support of research libraries, of modern high-speed computation, of international studies, and of the arts and humanities. The ability of universities to sustain strong efforts in these areas is important to the forward thrust of learning and to the country's well-being in a shrinking and troubled world. Yet, three of these areas impose very large expenditures upon the university, and available assistance for all of them is far too limited.

Libraries

Federal support of university and research libraries is particularly important, for the library is the central and essential supporting mechanism of teaching and research in the university. The emergence of new programs of teaching and research such as area studies, the expanding volume of world book production, and the rapidly increasing cost of books and journals have resulted in a compounding of library costs. The Federal Government has begun to assist in meeting these costs by categorical assistance to individual institutions and by programs of centralized assistance which benefit all institutions; both types of aid should be continued and expanded.

Each college and university must have on its own campus a library adequate to its own basic programs. Each Federally supported program which creates library needs, whether scientific research contract or NDEA language program, should make provision for the financing of these needs. General assistance in building collections, such as that provided under Title II A of the Higher Education Act of 1965, is also valuable. In all of these Federal programs two points seem to us of particular importance as specific guidelines are developed and modified: (1) library support of graduate and professional education is much more expensive than that of undergraduate education, and any *per capita* support formulae should take this into account; (2) the financial problems of older and larger libraries are often as acute as those of libraries in new institutions, and it is in the national interest that they be solved, for these large university and research libraries back-stop smaller institutions through direct lending, inter-library loans, and new forms of cooperation.

Fortunately, not all library collections and serials need be duplicated on each campus. The centralized acquisition and cataloguing program of the Library of Congress under Title II C of the Higher Education Act is of vital importance to all university libraries and should be fully funded and expanded along the lines proposed in pending amendments. This and other centralized bibliographic services of the great Federal libraries, as well as the continued growth of their collections, deserve continuing support as aid to higher education of a very real sort.

Finally, to make sure that the specialized and complex needs of libraries are met in the national interest and in the most efficient and economical way through coordinated Federal legislative and other programs, the work begun by the President's National Ad-

visory Commission on Libraries should be continued by a permanent National Library Commission, established in an appropriate government agency. Continuing guidance and support are needed to achieve the national networks of libraries which the new technology promises.

Computers

Some support for computing services in the universities has, of course, been available in conjunction with project research support, but there has been little or no support for the use of computing services in regular academic courses or for use by undergraduates or thesis students who cannot fit their project into an existing sponsored research program.

There is a pressing need to help universities acquire and utilize modern computers more extensively and effectively. Computers have become as essential to both scholarship and study as great libraries, but their costs are increasing and are likely for some time to increase rapidly both because of technological advances in equipment and services, and because scholars and students are constantly learning new ways of using computers in their work. To cite just one example, this year one major university reports a general funds appropriation of $1.2 million for the operation of its computer center, whereas 11 years ago this was not even a distinguishable item in the university's budget. Even though the scale of increase may not have to be as large in the coming decade, the growth in the requirement is bound to be both urgent and large. This is made emphatically clear in the report of the President's Science Advisory Committee, *Computers in Higher Education* (February 1967), which calculates the provision of adequate educational computing in all the country's colleges and universities at $414 million per year by 1971-72 as against an estimated $100 million in 1968-69.

Encouragement to the development of regional computer networks seems to be highly appropriate, since it is often wasteful or impractical for every institution to seek a large, complex, and completely self-sufficient installation. Such networks may take the form of sharing a single computing center, or sharing a central processing unit with peripheral and programming services provided on each campus, or exchange of specialized terminal services or pooling of total computing capacity among several university centers.

International Studies

The time has long since passed when America's affairs can be treated in isolation and we can afford a citizenry largely ignorant of and indifferent to the cultures, needs, and aspirations of non-Western peoples. In recent years much progress has been made to extend curricula, strengthen library holdings, make room for foreign students, and develop a larger American scholarly competence in the light of these requirements. Virtually every college and university is engaged in the effort in some degree. Meanwhile, the Fulbright-Hays Act has assisted greatly in the movement of students and scholars between the United States and foreign countries, and Title VI of the National Defense Education Act has been an invaluable aid in the development of university study and training centers focused on selected, critical languages and areas. The needs, however, far outstrip these steps and these resources. This was recognized in the development and passage of the International Education Act of 1966. Its subsequent failure to receive the appropriations that will permit its implementation is deplorable. It means continued, serious retarding of the effort to develop both the needed general citizens and the specialists who have adequate training in foreign cultures and world affairs. Support on a substantial scale of the greater study opportunities to be opened to American students and faculty members under the International Education Act of 1966 seems to this Association to be highly important.

Arts and Humanities

The arts and humanities, and some aspects of the social sciences, have been the under-supported areas of American higher education. As civilizing forces of society, they deserve special attention from a government and people concerned with the progress of humanity. We endorse strongly the establishment and work of the National Endowments for the Arts and for the Humanities, and believe that substantially larger appropriations for them will pay significant returns in the cultural life of the nation.

New Service Activities

In addition to the above-mentioned areas of concern, universities and colleges are being called upon with increased frequency and increased urgency to extend their attention and competencies

to community needs. Quite properly, in our view, higher education is being put under pressure to develop more active programs of instruction, research, and service aimed at such large current problems as "the inner city," air and water pollution, the needs of the predominantly Negro colleges, and the improvement of elementary and secondary schools. But by and large, even where Federal and state programs of financial assistance exist for these purposes, they remain inadequate, and do not fully employ the special competencies of the institutions of higher education. Consequently, when universities and colleges undertake such tasks, they commonly do so at the expense of other commitments which may be no less worthy. New funding, much of it long-term in nature, and a more realistic assessment of all costs must be achieved if colleges and universities are to extend their interests and activities effectively and responsibly into these areas of public concern.

5. General Institutional Grants

Student support assists students to meet charges for tuition, books, and living, and thus only indirectly helps institutions meet a part of the costs of educating students. Categorical assistance advances important specific purposes, but does not provide the unrestricted funding that institutions require to meet the threatening gap between general expenditures and normal income. Direct institutional grants must thus be given serious consideration as a means of aiding both state and privately supported higher education.

The need for such grants has been gaining increasing recognition. Indeed, nearly all major national organizations representing the institutions of higher education have now gone on record as favoring some form of broad-purpose, Federal support for accredited colleges and universities. These include the Association of American Colleges, the National Association of State Universities and Land-Grant Colleges, the American Association of State Colleges and Universities, the American Association of Junior Colleges, the American Council on Education, and, of course, this organization.

Broad-purpose grants may be allocated to institutions through administrative discretion or by formula systems. Discretionary systems place a huge burden on the decision-maker charged with allocating large sums of money among 2,000 institutions. Formulae of some sort are to be preferred, even though the devising of an absolutely perfect formula would be utopian.

Representative George P. Miller's National Institutional Grants Program, introduced in the 90th Congress, represents a step toward direct institutional grants and the beginning of a search for a feasible system of allocation. The Miller Bill would allocate institutional grants on four grounds: the volume of project research conducted by an institution, the number of advanced degrees it awards, the number of credit hours offered, and the number of high school graduates in the state in which it is located. The National Association of State Universities and Land-Grant Colleges has sponsored the Miller Bill, and the Association of American Universities has endorsed its intent and general approach, but it also indicated certain important reservations. These arise from the fact that the Bill treats only the natural and social sciences, and is unrealistic in failing to recognize the great cost differentials between education to the M.A. (or M.S.) and education to the Ph.D.

President Howard Bowen of the University of Iowa has proposed a different formula for institutional grants that takes into account both yearly increases in enrollments and increases in instructional costs. Significantly, this proposal restricts the Federal contribution to a fraction of these increases and thus insures that current sources (state or private) will not reduce their contributions and so shift an undue burden onto the Federal Government. The proposal could be adapted to include recognition of the cost differentials of the various levels of education, and even to recognize instructional quality as reflected in cost differences among institutions at the same level. Such alterations would incorporate into broad support important rewards for and incentives to qualitative effort.

In this vein, others have recommended that general institutional support should be based on a flat payment per student enrolled plus a percentage of the costs of instruction, with differing costs of differing levels and types of instruction being recognized. The simplicity of this approach speaks for it. Moreover, it recognizes and rewards differences in educational effort and quality as reflected in instructional costs, even while providing a minimum amount of aid to each institution for each student enrolled.

It is not our intent in this report to advocate a specific allocational formula. Several basic principles, however, can be suggested. First, it is most important to recognize not only numbers of students enrolled, but also natural differences in cost among levels of higher education as well as the need for improvement of educational quality in all institutions of higher education. The program

adopted also should include a factor which reasonably adjusts the Federal allocation to the continued rise in educational costs each year.

Secondly, extraordinary ability of certain types is of such prime importance in education beyond the M.A. and M.S. level, that the education of Ph.D. candidates, postdoctoral students, and other selected advanced professional students must be provided for in ways additional to general support formulae. Federal support of education at the doctoral and postdoctoral levels has proved highly effective when carried out selectively, through fellowships and traineeships coupled to institutional supplements.

Thirdly, if institutions are to be supported by general purpose Federal grants, they must be expected to meet recognized standards. To insist on this is not to exclude special programs of assistance to developing institutions. But some standards will have to be agreed upon, and quite possibly accreditation agencies should be strengthened, if Federal funds are to be allocated at once broadly and as efficiently as possible.

With these provisos, direct Federal institutional grants represent an appropriate and necessary means of meeting some of the problems of higher education. They recognize the nation's interest in the whole of our higher educational system as an indispensable source of instruction, research, and service. They provide the relatively free funds needed by an independent educational system. And they help to maintain the diversity and dynamism of its elements. Careful consideration and high priority should be given to a suitable program of general institutional grants.

6. Coordination and Planning

Federal funds for support of education, training and related programs are expended through ten executive departments and at least ten independent agencies. While some diversity in the Federal Government's approach to education is highly desirable to avoid excessive domination by any single agency and to provide for full utilization of the expertise of the Federal Government, better coordination among Federal programs of support for education and research is essential.

Furthermore, educational statistics, particularly those documenting the Federal role in higher education, should be collected and disseminated more systematically. Programs for higher education could be devised and evaluated with considerably more rationality

if educators and policy makers had access to better information.

Finally we suggest that the Executive Branch needs a systematic and continuous way of obtaining advice on educational policies and programs; this is particularly important for the Secretary of Health, Education, and Welfare and for the President. The need for a direct and open involvement of responsible leadership in higher education with the decision makers in the Federal Government is clear; and it will be even more necessary as the extent and scope of Federal funding in higher education grow greater.

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